

5 other multimedia object start and stop times, and three durations, a minimum duration, a  
6 maximum duration and a preferred duration for each multimedia object prior to starting playback  
7 of the multimedia object; and

8 resolving the durations of multimedia objects using said information based on actual  
9 multimedia object durations and arrival of information of multimedia objects to be played,  
10 wherein the step of resolving comprises the steps of:

11 collecting all the dependency relations for a label Px, by taking all objects  $n$  that have Px  
12 as the label for their end time:

13 
$$t_n + \text{minimum}(n) \leq t_x \leq t_n + \text{maximum}(n) \quad n = 1, \dots, N$$

14 where  $t_n$  is the start time of object  $n$ , and  $N$  is the number of objects;

15 using the  $N$  relations to calculate the tightest bounds on  $t_x$ :

16 
$$\min\{t_x\} \leq \{t_x\} \leq \max\{t_x\}$$

17 with

18 
$$\min\{t_x\} = \max\{t_x + \text{minimum}(n)\} \quad n = 1, \dots, N$$

19 
$$\max\{t_x\} = \min\{t_x + \text{maximum}(n)\} \quad n = 1, \dots, N;$$

20 recalculating bounds on the durations of each object  $n$ , by using:

21 
$$\text{duration}(n) = t_x - t_n$$

22 to get

23 
$$\min\{t_x\} - t_n \leq \text{duration}(n) \leq \max\{t_n\} - t_n \quad n = 1, \dots, N; \text{ and}$$

24 recalculating the preferred duration of each object  $n$  according to the process:

25 if  $(\text{preferred}(n) < \min\{t_x\} - t_n)$  then

26 
$$\text{preferred}(n) = \min\{t_x\} - t_n$$